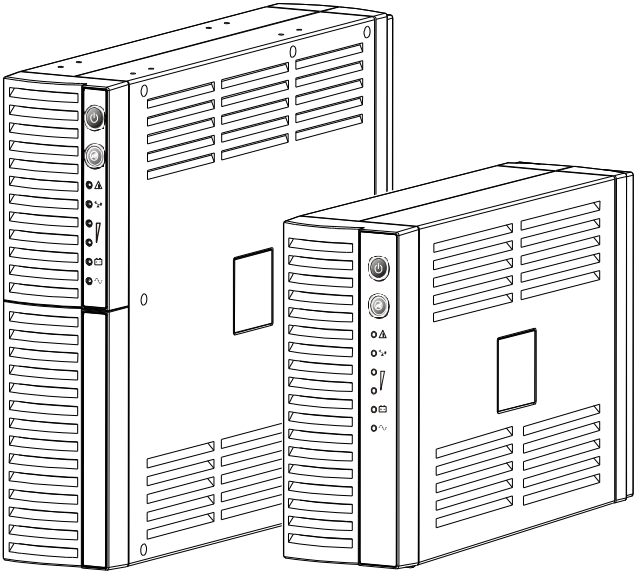
User's Manual

Pure Sine Wave Line Interactive UPS
500VA/750VA/1000VA/1500VA



Uninterruptible Power System

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SAFETY INSTRUCTION – CAUTION

1 IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries**.**

WARNING: Do not attempt to perform repair or service with this UPS. This UPS contains high voltage which could cause electrical shock even when the unit is disconnected from the mains outlet; the dangerous voltage may still be present through the battery. All maintenance and battery replacement should be performed by qualified service personnel only.

1. This UPS should be placed indoors with adequate airflow and free of contamination. To install or operate it in a clean and indoor environment, free from moisture, flammable liquids, and direct sunlight. Ambient temperature range must be 0°C to 40°C (32°F to 104°F).
2. This UPS is designed for Commercial/Industrial use only. It is not intended for use with life support application and other designated “life-critical” devices.
3. Do not remove the input power cord when this UPS is turned on. Remove the safety ground from this UPS and the equipment connected to the UPS.
4. Turn off this UPS and disconnect input power cord before battery replacement.
5. Battery contains high short-circuit current. Replacing or servicing the battery should be performed and supervised by qualified service personnel who are knowledgeable of batteries and required precautions.
   - Remove watches and jewelries
   - Use tools with insulated handles
   - Wear rubber gloves and boots.
   - Do not lay tools or metal parts on top of batteries.
   - Disconnect charging source prior to connecting or disconnecting battery terminals.
6. When replacing the batteries, use the appropriate replacement battery kits, same number and type of battery are MUST.
7. Do not open or mutilate the battery. Released electrolyte is harmful to skin and eyes that may be toxic.
8. Do not dispose of battery in a fire. Battery may explode. Proper disposal of battery is required. Please refer to your local laws and regulations for disposal requirements.

9. This UPS contains high voltages which may cause the risk of electric shock. Do not remove cover. There are no user replaceable parts inside this UPS. Please contact your local dealer or distributor for service.

10. This pluggable type equipment with battery already installed by the supplier is operator installable and may be operated by laymen.

11. During the installation of this equipment it should be assured that the sum of the leakage currents of the UPS and the connected loads does not exceed 3.5mA.

12. Attention, hazardous through electric shock. Also with disconnection of this unit from the mains, hazardous voltage still may be accessible through supply from battery. The battery supply should be therefore disconnected in the plus and minus pole of the battery when maintenance or service work inside the UPS is necessary.

13. The wall outlet must be within 2 meters of the equipment and accessible to the operator.

2 Description of Commonly Used Symbols

Symbol & Description	
Symbol	Description
⚠	Alert you to pay special attention
⚠	Caution of high voltage
~	Alternating current source(AC)
⎓	Direct current source(DC)
⏚	Protective ground
♲	Recycle
	Keep UPS in a clear area

1. INTRODUCTION

1.1 General Introduction

This series UPS is pure sine wave line interactive uninterruptible power system with compact design, and it is designed for critical application and environment, such as desktops, servers, workstations, and other networking equipments. The capacity range is available for 500VA, 750VA, 1000VA, and 1500VA. This series protects your sensitive electronic equipments against power problems including power sags, spike, brownouts, line noise, and blackouts.

This series is powered from the AC mains and supply also AC power backup. Communication and control to the unit is available through serial or USB ports located on the rear panel. The serial port will support communications directly with a server. The communications protocol for the serial ports shall conform to true RS232 interface.

This series is designed with outstanding performance and reliability. The unique features include the following:

- Microprocessor control guarantees high reliability
- High frequency design
- Built-in boost and buck AVR
- User replaceable design for 1000VA /1500VA models
- Selectable output range and line sensitive
- Cold startup capability
- Built-in Dry contact/RS-232/USB communication port
- Overload, Short-circuit, and overheat protection
- Rack/Tower 2 in 1 Design for 1000VA/1500VA models
- Network Transient Protector guards your network communications equipment from surges.

1.2 Front Panel

The UPS front panel indicates the UPS status and also identifies potential power problems. Figure 1 shows the UPS front panel indicators and controls.

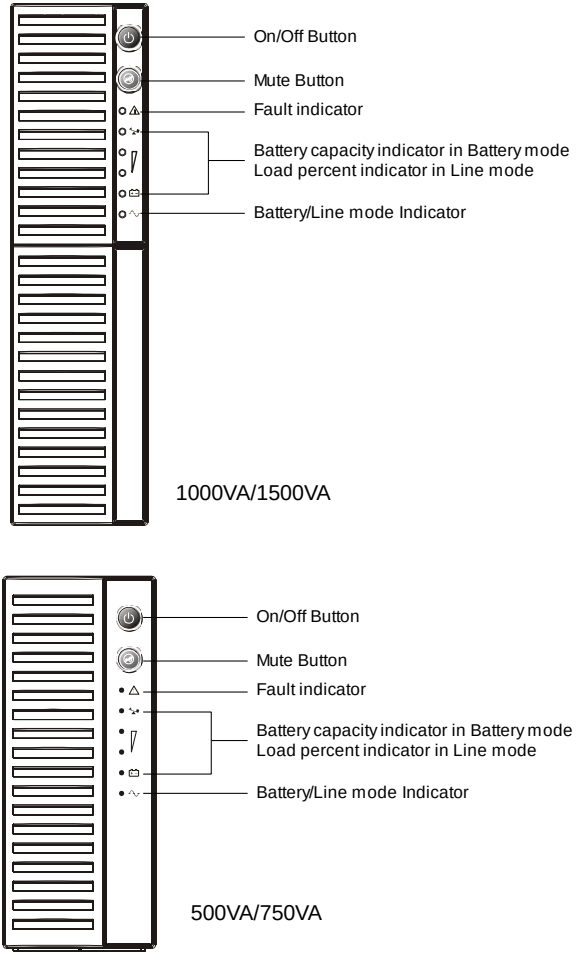


Figure 1. Front Panel Description

The UPS has a visible indication about the load level in line mode and the battery capacity in Battery mode. The indicating setting is described in Table 1.

Table 1. LED Indicator Assignment

Line mode	The 5st Green Led Lighting. Optional -- (The 1st to 4th green Led lighting to indicate load level) LED1 (green): ≥ 75% load level. LED2 (green): ≥ 50% load level. LED3 (green): ≥ 25% load level. LED4 (green): ≥ 00% load level.
Battery mode	The 5st Green Led blinking. Optional – (The 1st to 4th green Led lighting to indicate battery capacity) LED1 (green): battery voltage ≥ 12.5V / BAT. LED2 (green): battery voltage ≥ 11.5V / BAT. LED3 (green): battery voltage ≥ 11.0V / BAT. LED4 (green): battery voltage ≥ 10.5V / BAT.

The sequence of LED, please refer to the front panel below:

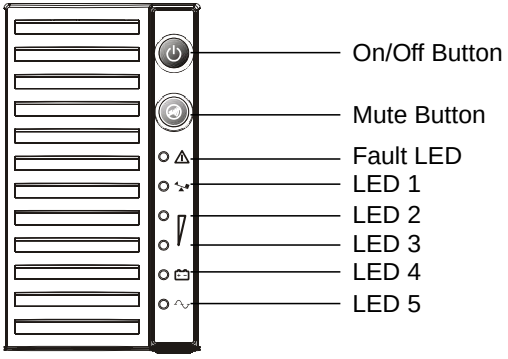


Figure 2. UPS front panel LED

If the alarm beeps or a UPS fault indicator stays on, see the tables on page 25 to identify and correct the problem.

1.3 UPS Rear Panels

This section shows the detailed information about the UPS rear panels

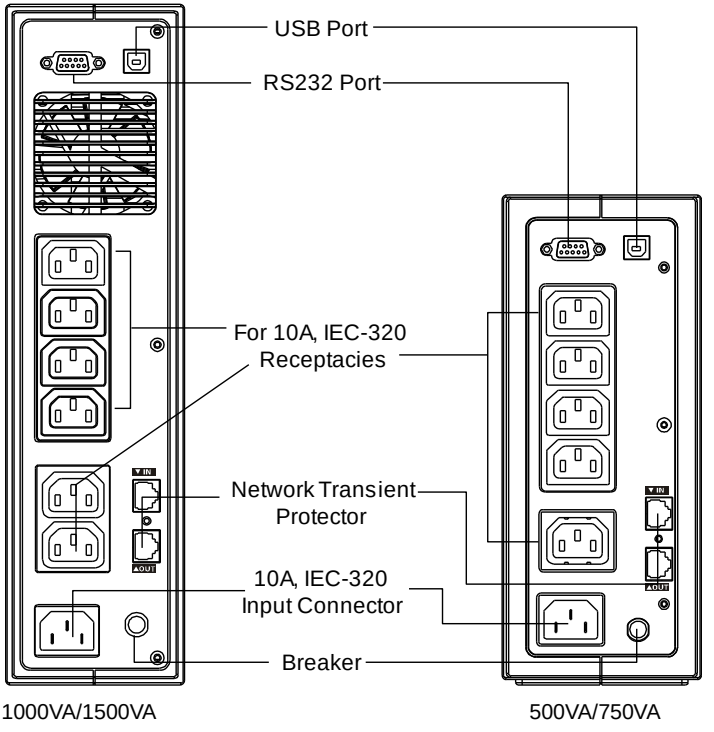


Figure 3. Rear Panel Description

2. INSTALLATION

2.1 Inspecting the Equipment

If any equipment has been damaged during the shipping process, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage. If your discover damage after acceptance, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage: 1) File with the carrier within 15 days of receipt of the equipment; 2) Send a copy of the damage claim within 15 days to your service representative.

ATTENTION Check the battery recharge date on the shipping carton label. If the date has expired and the batteries were never recharged, do not use the UPS. Contact your service representative.

2.2 Installing the UPS

The following steps explain how to install the UPS. Figure 4 shows a typical installation only. See “UPS Rear Panels” on page 8 for the rear panel of each model.

1. If you are installing power management software, connect your computer to the USB port or UPS communication port using the supplied cable (see page 16).

2. On 230V models (factory-set default), plug the detachable power cord into the input connector on the UPS rear panel.

3. Plug the UPS power cord into a power outlet.

4. Plug the equipment to be protected into the UPS output receptacles.

   DO NOT protect laser printers with the UPS because of the exceptionally high power requirements of the heating elements.

5. Press down the button, then the indicator illuminates indicating that power is available from the UPS output receptacles.

   If the alarm beeps or a UPS fault indicator stays on, see page 25-26.

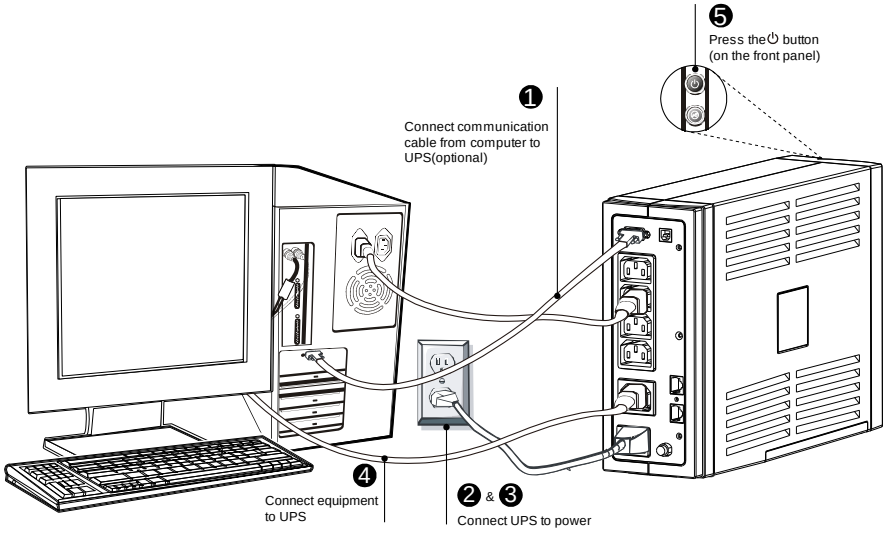


Figure 4. Typical UPS Installation

2.3 1000VA/1500VA Setup in Tower or Rack configurations

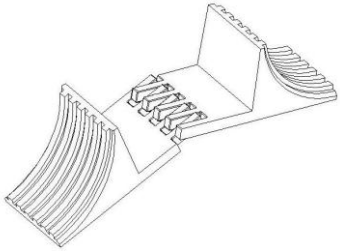
CAUTION 500VA/750VA models are designed only for tower configuration. DO NOT place these two models in rack configuration. Please simply install them without any additional stands for avoiding blocking the hot sinking holes.

The1000VA/1500VA models can be applied to rack configuration (with optional rack mount kids). For 1000VA/1500VA models, please follow the following instructions of Tower Configuration Setup & Rack-Mount Configuration Setup.

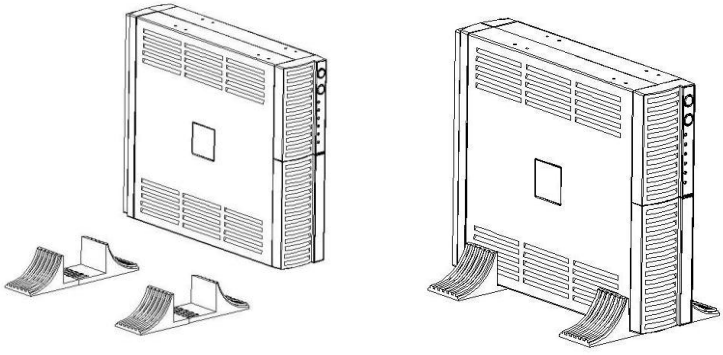
1. Tower Configuration Setup

There are four pieces of plastic stand components accompanying with 1000VA/1500VA models. Two pieces can be assembled to one complete stand. In tower configuration, use the two stands for stabilizing the UPS when it's in vertical position. The two UPS stands must be attached to the bottom of the UPS unit.

1) Assemble the two stand components together



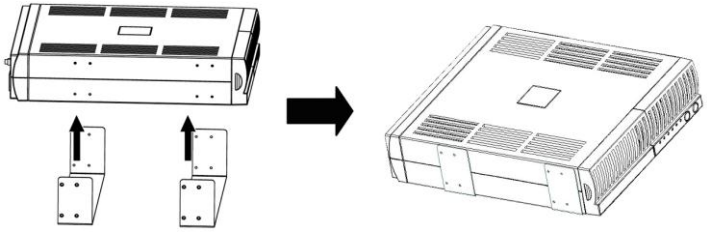
2) Slide down the UPS vertically and put the UPS stands at the bottom of the tower. Then place the UPS into two stands carefully.



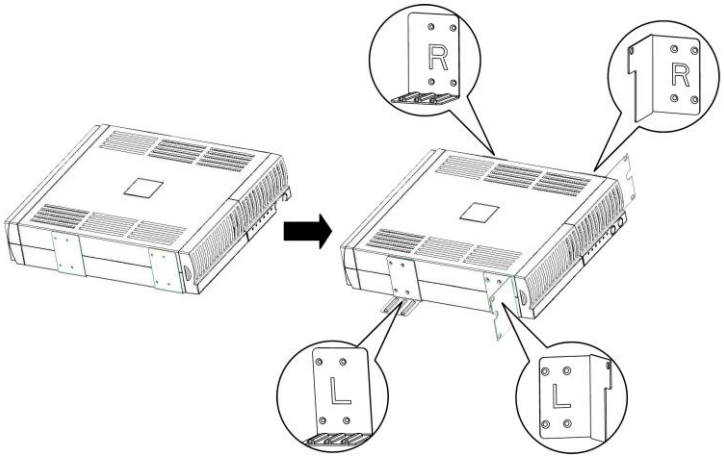
2. Rack-Mount Configuration Setup

This UPS can be installed into standard 19” rack. It requires the height of 2U from the rack. Use the following procedure to install the UPS into a rack.

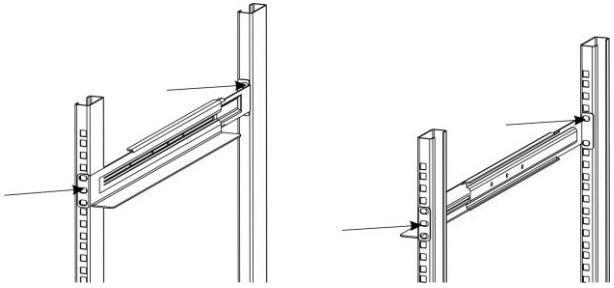
1) Align the mounting bearings with screw holes on the side of the UPS.(Mind the orientation of plates, fixing as below)



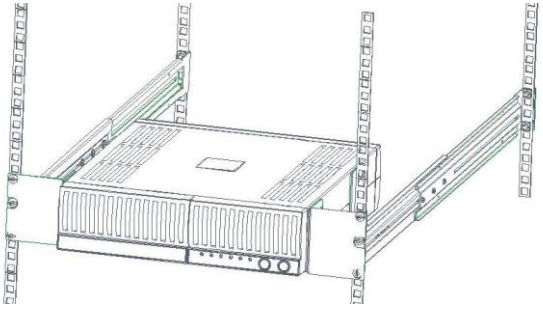
2) Align the mounting ears with screw holes on the side of the UPS and screw together.(Mind the **L**eft and **R**ight plates, fixing as below)



3) Fix the slide to the rack enclosure with screws

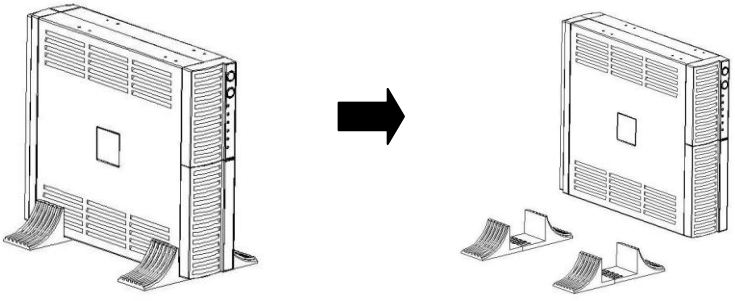


4) Insert UPS into the slide assemblies and lock it well in the rack enclosure

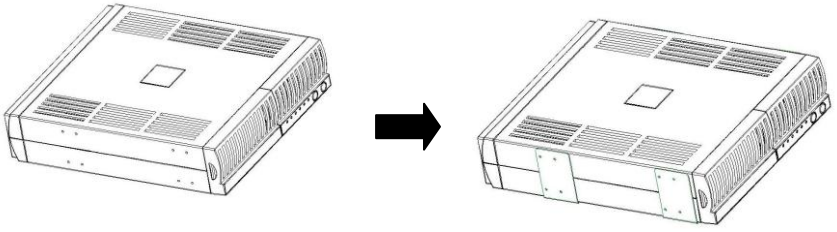


3. Tower Configuration to Rack-Mount Configuration

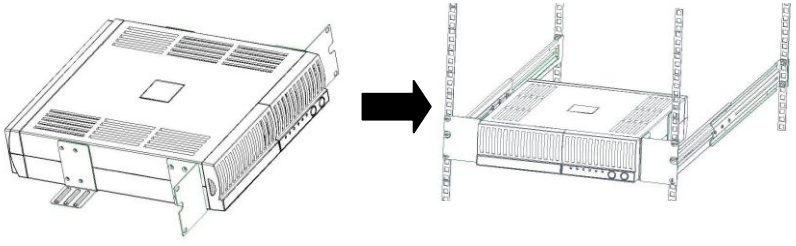
1) Slide up the UPS vertically and put the UPS out of the stands. Place the UPS on flat area with a soft and clean cushion



2) Align the mounting bearings with screw holes on the side of the UPS

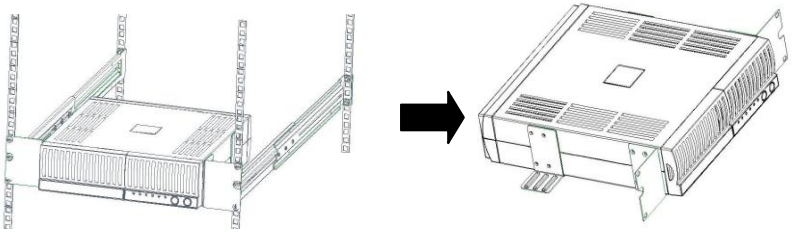


3) Align the mounting ears with screw holes on the side of the UPS and screw together then Insert UPS into the slide assemblies and lock it in the rack enclosure

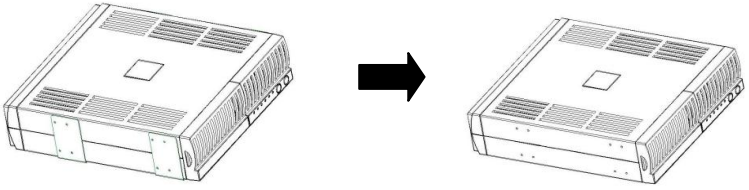


4. Rack-Mount Configuration to Tower Configuration

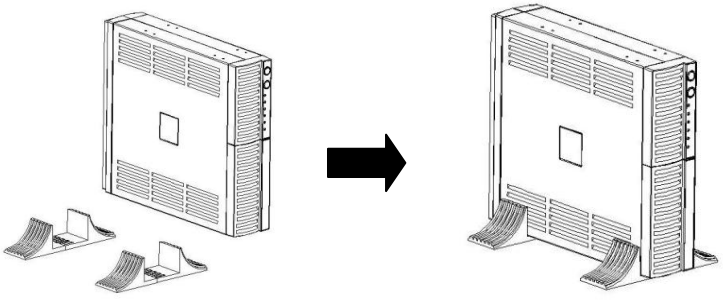
1) Unscrew the UPS from the Rack enclosure



2) Unscrew the ears and the bearings from the UPS



3) Slide down the UPS vertically and put the UPS stands at the end of the tower. Place the UPS into two stands carefully



3. OPERATION

3.1 Starting Up

After the UPS is connected to a power outlet, the UPS enters Standby mode. To turn on the UPS, press down the button. After the UPS is turned on, it enters Normal mode. The indicator will **light** indicating that power is available from the UPS output receptacles.

3.2 Starting the UPS on Battery mode

NOTE The UPS will not detect the input frequency automatically when starting on battery; the default frequency is set to **50Hz.**

To turn on the UPS without utility power, press down the button. The UPS will also supply power to the connected equipments and operate in Battery Mode. At the meantime, the indicator will **flash** and the alarm will sound every 10 seconds.

3.3 Muting the Buzzer

Press down the button to initiate the Muting function in Battery mode. If you want to release the muting, press up the button.

NOTE The Muting function only can be initiated in Battery mode, and the alarm does not silence if there is a UPS fault, low battery condition, or if the battery needs to be replaced.

3.4 Turning the UPS On

To turn off the UPS, press and release the button and then unplug the UPS from the power outlet. If you do not unplug the UPS, it remains in Standby mode.

3.5 Standby Mode

When the UPS is turned off and remains plugged into a power outlet, the UPS is in Standby mode. All indicators are off and power is not available to your equipment. The battery recharges when necessary.

4. ADDITIONAL UPS FEATURES

4.1 Communication Options

The UPS is equipped with a USB and a DB-9 communication port. Either the USB port or the DB-9 communication port may be used to monitor the UPS; however, they cannot operate simultaneously.

1. USB Port

The UPS can communicate with a USB-compliant computer using WinPower Monitoring Software.

2. RS232+Dry Contact

The RS232 pin functions are described in Table 2.

Table 2. DB9 Female pin functions (RS232 +dry contact)

PIN #	Description	I/O	Function Explanation
1	Low Battery	Output	Low Battery Output (*normally open, pull to Pin#5 when battery low alarm in battery mode)
2	TxD	Output	TxD
3	RxD	Input	RxD
4	DTR	Input	(tied to pin 6)
5	Common	--	Common (tied to chassis)
6	DSR	Output	(tied to pin 4)
7	RTS	Input	No connection
8	AC Fail	Output	AC Fail Output (*normally open, pull to Pin#5 when UPS is in battery mode).

4.2 Monitoring Software Installation

WinPower is a brand new UPS monitoring software, which provides user-friendly interface to monitor and control your UPS. This unique software provides safely auto shutdown for multi-computer systems while power failure. With this software, users can monitor and control any UPS on the same LAN no matter how far from the UPSs. Figure 5 shows the communicating interface using WinPower.

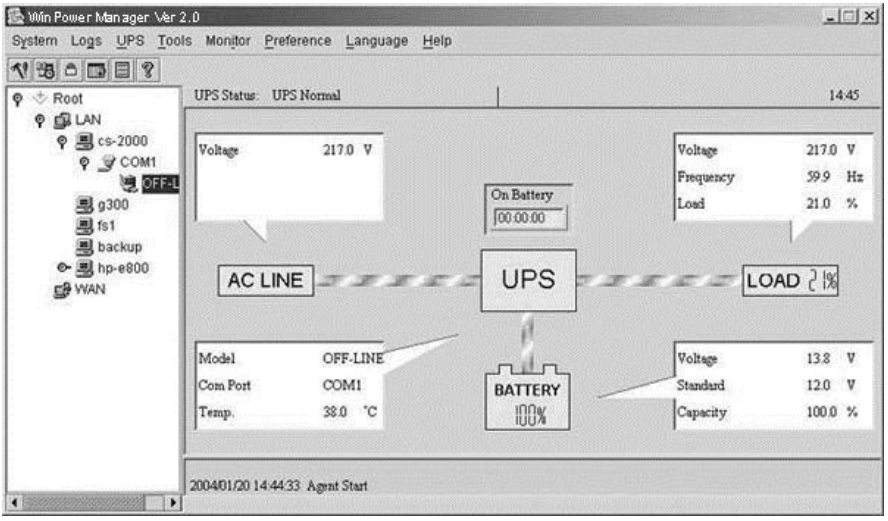


Figure 5. UPS communicates with a computer using WinPower

Installation procedure:

1. Go to the website: http://www.ups-software-download.com/winpower.htm

2. Choose the operation system you need and follow the instruction described on the website to download the software.

3. When downloading all required files from the internet, enter the serial No: 511C1-01220-0100-478DF2A to install the software.

When your computer restarts, the WinPower software will appear as a green plug icon located in the system tray, near the clock.

4.3 Network Transient Protector

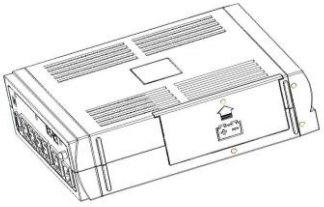
The Network Transient Protector is located on the rear panel and has jacks labeled IN and OUT. Please connect the input connector of the equipment you are protecting to the jack labeled OUT, and connect the network cable to the jack labeled IN.

5. BATTERY REPLACEMENT

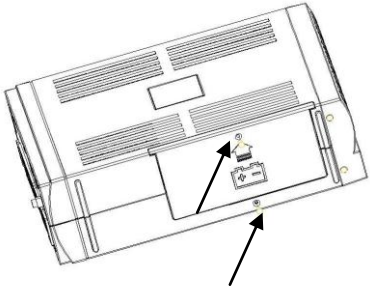
5.1 500VA/750VA models

Follow the steps and charts below to replace battery for 500/750VA models:

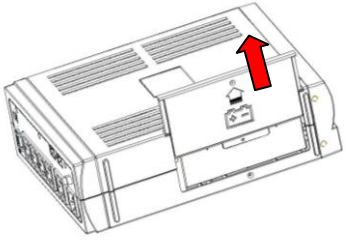
1. Put the UPS on a smooth place



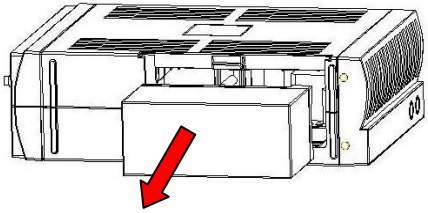
2. Unscrew the screws on the battery cover



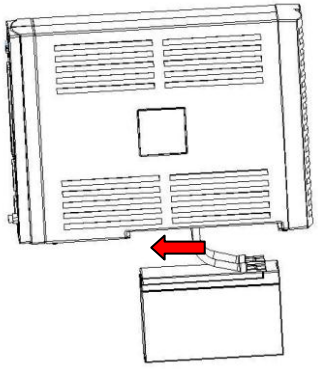
3. Pull out the battery cover from the UPS



4. Pull the battery out (from bottom side) onto flat area



5. Disconnect the cable from the battery

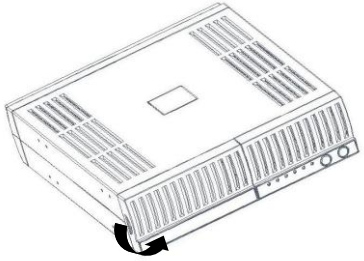


6. Reconnect the battery cables to the new battery and screw up the battery cover

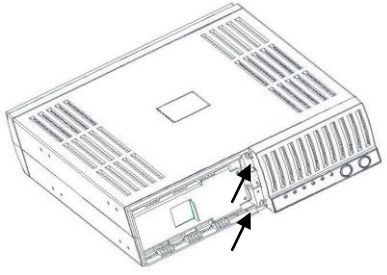
5.2 1000VA/1500VA models

Follow the steps and charts below to replace batteries for 1000/1500VA models:

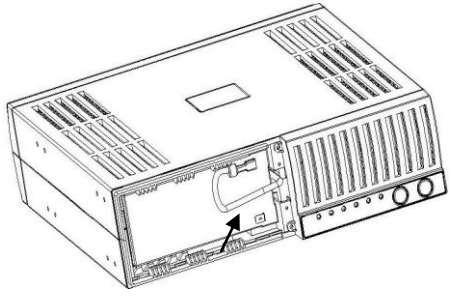
1. Remove the battery door front panel by pulling on both ends.



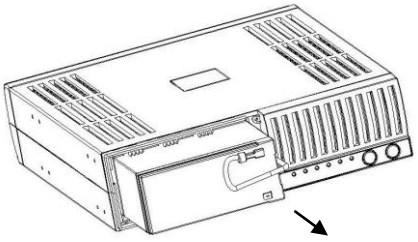
2. Unscrew the battery plate from UPS.



3. Disconnect the **RED** battery cable.



4. Pull the battery out (from right side) onto flat area.



5. Disconnect the BLACK battery cable.
6. Reconnect the BLACK battery cable to the new batteries.
7. Slide the new batteries into battery case.
8. Reconnect the battery cable and screw up the battery bracket.
9. Close and reinstall the front panel back to battery case

6. SPECIFICATIONS

MODEL		500VA	750VA	1000VA	1500VA
Capacity	VA/W	500VA/300W	750VA/500W	1000VA/600W	1500VA/870W
Input	Voltage	220/230/240VAC			
	Acceptable Voltage Range	0-300VAC			
	Nominal Frequency	50/60Hz ±5Hz for Normal Mode; >40Hz for Generator Mode			
Output	Voltage	220/230/240VAC			
	Regulation (Normal Mode)	+/-15% (Max) of nominal voltage			
	Regulation (Battery Mode)	+/-10%		+/- 5%	
	Voltage Waveform	Sine wave			
	Frequency	50Hz or 60Hz			
Overload Capability	Normal Mode	110 % ± 8 %,fault after 3 minutes;130% ± 8 %,fault after 10 cycles minimum			
	Boost/Buck Mode	70%+ 8 %/-4%；overload alarming after 25minutes，fault after 30minutes			
	Battery Mode	110 % ± 8 %,fault after 30 seconds；120 % ± 8 %,fault after 5 cycles minimum			
Transfer Time	Typical	2-7 ms typical, 10ms max.			
Efficiency	Normal Mode	> 95% (Rated full load, battery full charged)			
	Boost/Buck Mode	> 90% (Rated full load, battery full charged)			
	Battery Mode	> 80% (Rated full load, battery full charged)			
Battery & Charger	Configuration	12V，7Ah	12V,9Ah	12V，7Ah(2)	12V，9Ah(2)
	Type	Seals, maintenance-free, valve-regulated, lead acid			
	Recharge Time	<6 hours to 90%	<8 hours to 90%	<6 hours to 90%	<8 hours to 90%
Backup Time	100% SPS load	3'30"	2'00"	4'00''	3'00''
	80% SPS load	5'30"	3'30"	5'30''	4'30''
	50% SPS load	12'00	8'00"	11'00''	10'00''
	100W SPS load	20'00"	26'00"	35'00''	40'00''
Status Indicators	Line mode	The 5st Green Led Lighting.			
	Battery mode	The 5st Green Led blinking every 10s.			
	Load/Battery Level	Load level in Line mode： ⩾75%:LED1~LED4 lighting; ⩾50%:LED2~LED4 lighting; ⩾25%:LED3~LED4 lighting; ⩾00%:LED4 lighting Battery level in Battery mode： ⩾12.5V / BAT:LED1~LED4 lighting; ⩾11.5V / BAT:LED2~LED4 lighting; ⩾11.0V / BAT:LED3~LED4 lighting; ⩾10.5V / BAT:LED4 lighting **NOTE:** The numbers of LEDs please refer to Figure 2.			
	Fan Fault (Fault)	Red LED and LED1 (the first green) Lighting			
	Output Voltage low (Fault)	Red LED and LED2 (the 2nd green) Lighting			
	Output Voltage high (Fault)	Red LED and LED3 (the 3rd green) Lighting			
	Output Short Circuit (Fault)	Red LED and LED4 (the 4th green) Lighting			
	Overload (Fault)	Red LED Lighting and LED5 (green) blinking in Bat mode, lighting in Line mode			
	- Battery replace	Red LED Blinking			
	- Over charge	Red LED Blinking			

	- Charger fail	Red LED Blinking			
Audible alarm	- Back up mode	Sounding every 10 seconds			
	- Battery low	Sounding every 1 second			
	- Overload	Sounding every 0.5 seconds			
	- Over charge	Sounding every 1.5 seconds			
	- Over temperature	Sounding every 2.5 seconds			
	- Battery replace	Sounding every 3 seconds			
	- Charger fail	Sounding every 5 seconds			
	- Fault	Continuous sounding			
Dimensions and Weights	Dimensions(L*W*H mm)	330*96*236	330*96*236	390*86*328	390*86*328
	Weight(kg)	5.26	6.22	8.62	10.36
Environment and Safety	Operating Temperature	0℃ to +40℃			
	Relative Humidity	0 to 90% Relative Humidity (Non-condensing)			
	Audible Noise @1 meter	<40 dBA	<40 dBA	<45 dBA	<45 dBA
	Safety Conformance	EN62040-1-1, CE			
	EMC (Class A)	EN62040-2 C2			

7. TROUBLE SHOOTING

7.1 Audible Alarm Trouble Shooting:

Problem	Cause	Solution
Sounding every 10 seconds	The UPS is on battery	Check the input voltage
Sounding every 0.5 seconds	Output overload	Check load level indicator and remove some load
Sounding every second	The battery is running low	Save your work and turn off your equipment
Sounding every 1.5 seconds	The battery is running low	Save your work and turn off your equipment
Sounding every 2.5 seconds	UPS internal temperature is too high	Shutdown is imminent. Save your work and turn off your equipment. Turn off the UPS. Clear vents and remove any heat sources. Ensure the airflow around the UPS is not restricted. Wait at least 5 minutes and restart the UPS. If the condition persists, contact your service representative
Sounding every 3.0 seconds	Battery may need to charge or service	Replace the battery
Sounding every 5.0 seconds	Charger fail	Please contact your local dealer
Continuously sounding	The UPS fails or fan fault	Please contact your local dealer

7.2 Visible Alarm Trouble Shooting: The UPS has a visible alarm feature to help you to solve some common potential power problems. About the numbering of LEDs, please refer to the Figure. 2 **UPS front panel LED** on Page 7.

Problem	Cause	Solution
Fault LED and LED1 lighting	UPS fan fault (1000/1500VA models only)	Check whether there is something blocks the fan. Or, contact your local dealer.
Fault LED lighting and LED5 lighting or flashing	Output overload	Check load level indicator and remove some load
Fault LED and LED2 lighting	Output voltage too low	Please contact your local dealer
Fault LED and LED3 lighting	Output voltage too high	Please contact your local dealer
Fault LED and LED4 lighting	Output short circuit	Check the output receptacles, or contact your local dealer

7.3 General Trouble Shooting:

Problem	Cause	Solution
The UPS is not on when power switch is pressed	The power cord is not connected correctly	Check the power cord connection
	The wall outlet may be faulty	Please contact your local qualified electrician
	The UPS output may short-circuit or overload	1. Disconnect all loads and ensure nothing is lodged in output receptacles 2. Ensure loads are not detective or shorted internally
	Internal fuse may be blown	Please contact your local dealer
UPS could not provide power to the load	Power presents on one output receptacle	Check the output fuse
	No output from any output receptacle	1. Check the connected cable 2. Ensure the load does not exceed the maximum rating of UPS
Battery has reduced backup time	Battery is not charged	Re-charge the battery at least 24 hours
.	Battery may not able to hold a full charge due to age.	1. Recharge the battery at least 8 hours 2. Replace Battery
The UPS fault LED lights on	The UPS fails	Save your work and turn off equipment. Please contact your local dealer
Connected equipment's lose power while connected to the UPS	The UPS may be over-loaded	Check the load status
	The UPS may be failed	Please contact your local dealer
The UPS is beeping continuously	The UPS is in fault condition	Check the audible alarms and visible condition tables
Buttons does not work	1. The UPS is in green mode 2. Button is Broken	1. Wait for a while and try again 2. Please contact your local dealer